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STUDY TITLE: Social Indicators Study of Alaskan Coastal Villages

REPORT TITLE: Social Indicators Study of Alaskan Coastal Villages V. Research Methodology: Design, Sampling, Reliability and Validity (Exxon Valdez Spill Area, 1988-1992)

CONTRACT NUMBER: 14-12-0001-30300. Technical Report No. 156

SPONSORING OCS REGION Alaska

APPLICABLE PLANNING AREAS: Shumagin, North Aleutian Baain, Kodiak, Prince William Sound, Cook Inlet, Gulf of Alaska.

FISCAL YEARS OF PROJECT FUNDING: FY 1989- FY 1993 (inclusive)

COSTS: FY1989: $84,578; FY1990: $41,498 FY1991: $168,245; FY 1992: $70,387; FY1993 $48,908; FY1994 4,323 THROUGH 12/15/93

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KEY WORDS: Chenega, Chignik, Cordova. Ekwok, False Pass,, Karluk, Kenai, Kodiak, Larsen Bay, Old Harbor, Port Graham, Seldovia, Tatitlek, Tyonek, Valdez, Aleutian-Pribilof Islands, Bristol Bay, Cook Inlet, Gulf of Alaska, Prince William Sound, Exxon Valdez oil spill, cultural change, economic change, environmental consequences, reliability, validity, multi-method, multi-data sets, protocol, questionnaire, key informant protocol (KIP), AOSIS questionnaire (AQI).

BACKGROUND: The original social indicators study was commenced in late 1986 among31 villages in coastal Alaska from Kodiak on the south to Kaktovik on the north as part of the Mineral Management Service's research program aimed at assessing potential human and social impacts of oil-related development throughout coastal regions in which the harvests of naturally occurring resources of the land and sea are central to commercial activity as well as to

subsistence life styles. Following the foundering of the Exxon Valdez oil spill of March 24, 1989, the social indicators study was enlarged to encompass several villages in the Gulf of Alaska, Prince William Sound, Kodiak Island, and Cook Inlet that were directly affected by the oil. Two Kodiak Island villages in the original sample, Kodiak City and Old Harbor, were incorporated into the spill area sample and provide the link between the original study and the spill area study. This report is the second of the spill area study and fifth in the expanded social indicators study. It explains the relation between the original research and the spill area research; the spi ll area research design; and the methodologies employed to avert threats to . validity while developing two social indicators systems.

OBJECTIVES: The original social indicators project was charged with developing two social indicator systems sensitive to the consequences of OCS activities for persona, their households, their village social. economic. and political organizations, and the environments in which they gain their livelihoods. These *systems were* developed and validated inTR153 (MMS Report Number 92-003 1) and TR 154 (MMS Report Number 93-0070). Each system is be based on a separate methodology and a separate data set: one on a questionnaire instrument the *other on* a protocol. Following requests of the Minerals Management Service, i the development of these systems special attention was paid to distinguishing differences smong ANCSA regions, between Native end non-Native residents, between villages which possessed well developed infrastructures end superstructures and those that did not, and between Outer Continental Shelf oil-related activities that may effect village organizations and life with within villages and other economic factors which mav effect village organizations end life within villages as well. ~~Although not requested by the Minerals Management Service, this~~ volume presents the tests of construct validity, sensitivity, item- and intra-topic reliability and validity, over-time reliability, over-time stationariness, "history," "regression," testing artifacts end "reactivity" employed in developing the questionnaire-based end protocol-based social indicators systems for the spill area. ~~It is anticipated that~~ the social indicators systems developed for the spill area and for the original study area periodically will be used to monitor the social conditions of Alaska's rurall communities.

DESCRIPTION: This volume focuses on the research design and the research methodologies empldoyed in creating two social indicator systems. one based on a forced-choice instrument (the AOSIuestionnaire instrument or AQI) and one based on an open-ended protocol (the key informant protocol or KIP). *The* goal is *to* avert *threats to* internal and external validity to each of the indicator systems so that each will be sensitive to change. e describe how we embed panels in a ~~pretest-posttest sampling~~ design in order to eats to validity caused by reactivity (testing artifacts) and specification error (ecological fallacy). The design. referred to es "Solomon Four Group," is modified from the original research design. Funds *were not* available to conduct three research waves. each spaced one year apart. among the 10 villages in the sample. One wave was conducted during the late summer of 1989 following the spill and concluded during the early winter of 1990. A second wave was conducted during the winter of 1991. During the winter of 1992 the Subsistence Division of Alaska Department of Fish end Game, under contract with the Minerals Management Service. administered a small sample of

social indicators questions among respondents in the 10 villages in the spill area sample. These data are employed to facilitate analyses of over-time stationariness and reliability. The manner in which pretest and posttest samples are drawn without replacement, and the manner in which reinterview panels are selected from pretest samples are described. All teats for AQI and KIP item reliability and validity, including tests for construct validity, internal correlations, stationariness, and testing artifacts are presented. The social indicators spill area data sets comprise 792 AQI interviews and 424 KIP interviews. The social effects data set collected by Alaska Department of Fish and Game researchers in 1992 comprises responses from 839 respondents on several AQI and KIP items. The AQI and KIP items that passed all reliability and validity tests are retained, for the social indicators systems and are analyzed in **Social Indicators Study VI.** Analysis **of the Spill Area Sample..**

SIGNIFICANT CONCLUSIONS: Two valid social indicator systems are developed whose inkr-irtstrument reliability is very high and whose individual sensitivity to exogenous and endogenous factors are non controvertible.

STUDY RESULTS: The AQI and KIP indicator systems show that whereas each has strengths, each also has a weakness that is accommodated by the strength of tire other. The strength of the AQI system is its objectivity. Every respondent is asked the same questions end every respondent must select among a set of options for each of those questions. The objectivity is threatened by the trivializing of the topic at which the question is aimed. The KIP system is subjective. That is. every respondent is asked to respond on the same set of topics. But the responses arc not forced, that is to say, the choices among answers on each topic are not constrained by a finite set of alternatives. It is incumbent upon the interviewer to classify the responses nto variable classes. It is the very strength of the KIP instrument, responses are open-ended and often rich with examples, that allows us to evaluate whether the questionnaire items have trivialized the topics they address. In short, the KIP responses help us to interpret the meaning of AQI responses. On the other hand. the objectivity of the AQI responses allow us to edjust for the subjectivity of the KIP responses (and the classification of those responses by "" interviewers). Our analysis of reliability and validity issues pertaining to both data sets demonstrate marked and enduring differences between Nativea and non-Natives, between residents of large, complex villages end residents of small, simple villages, and between residents of commercial fishing villages and residents of non-commercial fishing villages on a wide variety of economic, subsistence economic. social. political, and religious items. The preliminary multivariate analyses of the data sets in TR1 56 provide strong evidence of changes most likely induced by the oil spill and changes most likely affected by the oil spill. Multivariate controls exercised under various conditions are presented in the **final report of the spill area social indicators study.**

STUDY PRODUCTS: Brelsford, T., A. Fienup-Riordan, J. Jorgensen. S. McNabb, P. Petrivelli, and L. Robbins. 1992. Social Indicators Study of Alaskan Coastal Villages L Key Informant **Summaries.** Volume 1: Schedule A Regions. prepared by Human Relations Area Files for the U.

S. Department of the Interior, Minerals Management Service Alaska OCS Region, Anchorage, Alaska. Technical Report No. 151. MMS Report Number 92-0031. Contract 14-12-0001-30300.

Endter-Wada, J.. J. Hofmeister, R. Mason, S. McNabb, and J. Mulcahy. 1992. Social Indicators Study of Alaskan Coastal Villages I. Key Informant Summaries. Volume 2: Schedule B Regions. Prepared by Human Relations Area Files for the U. S., Department of the Interior, Minerals Management Service Alaska OCS Region, Anchorage, Alaska Technical Report No.- 151. MMS Report Number 92-0031. *contract 14- I* 2-0001-30300.

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Jorgensen, J and S. McNabb. 1993. Social Indicators Study of Alaskan Coastal Villages II. Research Methodology Design. Sampling, Reliability and Validity. Prepared by Human Relations Arce Files for the U. S. Department of the Interior, Minerals Management Service Alaska OCS Region. Anchorage, Alaska. Technical Report No. 153. MMS Report Number 93-0035. Contract 14-12-0001-30300.

Jorgensen, J. end S. McNabb. 1993. Social Indicators Study of Alaskan Coastal Villages III. Analysis. Prepared by Human Relations Area Files for the U. S. Department of Interior, Minerals Management Service Alaska OCS Region. Anchorage; Alaska. Technical Report No. 154. MMS Report Number 93-0070. Contract 14-12-0001-30300.

Endter-Wada, J., J. Hofmeister, R. Meeon. S. McNabb, E. Morrison, S. Reynolds, E. Robbins. L. Robbins, and C. Takada Rooks. 1993. Social Indicators Study of Alaskan Coastal Villages IV. Postspill Key Informant Summaries. Schedule C Communities; Pert 1 (Cordova, Tatitlek, Valdez) and Part 2 (Kenai, Tyonek, Seldovia, Kodiak City, Karluk, Old Harbor. Chignik). Prepared by Human Relations Area Files for the U. S. Department of Interior, Minerals Management Service Alaska OCS Region. Anchorage. Alaska. 'Technical Report No. 155. MMS Report No. 92-0052. Contract No. 14-12-0001-30300.

Jorgensen, J. and S. McNabb. 1993. Social Indicators Study of Alaskan Coastal Villages V. Research Methodology: Design, Sampling, Reliability and Validity (Exxon Valdez Spill Area. 1988-1 992). Prepared by Human Relations Area Files for the U. S. Department of Interior, Minerals Management Service Alaska OCS Region. Anchorage, Alaska. Technical Report No. 156. MMS Report No. 93-0071. Contract No. 14-12-0001-30300.